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New data on Microgastrinae in Serbia and Montenegro (Hymenoptera: Braconidae) and their hosts

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***Abstract*:**

Žikić, V., Lazarević, M., Stanković, S.S., Ilić Milošević, M.: ***New data on Microgastrinae in Serbia and Montenegro (Hymenoptera: Braconidae) and their hosts. Biologica Nyssana, 6 (1), September 2015: 41-48.***

The fauna of Microgastrinae wasps was investigated on the territory of Serbia and Montenegro. Eighteen species were recorded and most of them emerged from the previously identified hosts. The species belong to seven genera: *Apanteles* (1), *Cotesia* (7), *Dolichogenidea* (2), *Glyptapanteles* (3), *Microgaster* (1), *Microplitis* (2) and *Pholetesor* (2). For the territory of Montenegro there is one newly reported species, *Cotesia tetricus*, while for Serbia seven species are new: *Cotesia ofella*, *Dolichogenidea breviventris*, *Glyptapanteles compressiventris*, *G. porthetriae*, *Microgaster bicolor*, *Microplitis pellucida*, *M. varipes* and *Pholetesor elpis*. Apart from microgastrine wasps, some hyperparasitoids were also identified.

Key words: Microgastrinae, parasitoids, Lepidoptera, trophic associations

***Apstrakt*:**

Žikić, V., Lazarević, M., Stanković, S.S., Ilić Milošević, M.: ***Novi podaci o fauni mikrogastrina u Srbiji i Crnoj Gori (Hymenoptera: Braconidae) i njihovih domaćina. Biologica Nyssana, 6 (1), Septembar 2015: 41-48.***

Istraživana je fauna paraziskih osa iz potfamilije Microgastrinae na teritoriji Srbije i Crne Gore. Identifikovano je ukupno 18 vrsta, od čega je većina dobijena iz odgajenog i identifikovanog domaćina. Registrovane vrste parazitoida pripadaju sledećim rodovima: *Apanteles* (1), *Cotesia* (7), *Dolichogenidea* (2), *Glyptapanteles* (3), *Microgaster* (1), *Microplitis* (2) i *Pholetesor* (2). Za teritoriju Crne Gore registrovana je jedna nova vrsta *Cotesia tetricus*, dok je za teritoriju Srbije: *Cotesia ofella*, *Dolichogenidea breviventris*, *Glyptapanteles compressiventris*, *G. porthetriae*, *Microgaster bicolor*, *Microplitis pellucida*, *M. varipes* i *Pholetesor elpis*. Pored mikrogastrina registrovano je više vrsta hiperparazitoida.

Key words: Microgastrinae, parasitoidi, Lepidoptera, trofičke asocijacije

Introduction

Members of the subfamily Microgastrinae are koinobiont endoparasitoids of larvae Lepidoptera and represent one of the most numerous and very important group of Braconidae. Most of the species are usually small, about 2-5 mm in length, black coloured, sometimes with yellowish parts,

especially on legs. Some of the species are solitary parasitoids, in which case only one microgastrine larva develops inside the host body. However, some exhibit different way of parasitism which is gregarious, when several parasitoid individuals develop from only one egg laid by a single female; in which case all parasitoids have the same genotype (Shasw & Huddleston, 1991). Beside Lepidoptera as hosts for microgastrines larvae, there are several records of other insect groups such as coleopterans, dipterans or hymenopterans (Symphyta) (Yu et al., 2012). A total of 2000 species of this subfamily have been reported worldwide and of that number about 500 species inhabit the Palaearctic (Whitfield et al., 2002; Pérez-Rodríguez et al., 2013).

Phylogenetically Microgastrinae belongs to the Microgastroid complex of subfamilies along with Cardiochilinae, Cheloninae, Ichneutinae, Khoikhoiinae, Miracinae (Wharton et al., 1992) which is confirmed by later analysis using molecular markers for 18S rRNK, 28S rRNK, protein-coding genes (CAD_{54-405}), and the coding gene for acetyl-coenzyme A carboxylase (ACC) (Sharanowski et al., 2011). Classification of Microgastrinae is still very confusing because many authors prefer keeping their own systems of identification and separation of some genera and subgenera to new ones. Another important fact is that this large subfamily constantly reveals its richness in diversity of species and genera further forcing new reclassifications. The maximum accepted number of genera is 31, which are reported in Yu et al. (2012). The biggest problems occur in very large, "traditional genera", firstly in *Apanteles* Förster, *Cotesia* Cameron, than in *Microgaster* Latreille, *Microplitis* Foerster and *Protapanteles* Ashmead.

The fauna of Microgasterinae in Serbia and Montenegro is poorly investigated. There are few publications that are directly related to the taxonomy of this subfamily: Papp (1973, 2009), Brajković (1989) and Žikić et al. (2000); whereas most of the cited publications predominantly refer to Serbia. Sporadically, some records could be found in papers by other authors e.g. (Whitfield, 1997) but, certainly, the most important are in Tobias (1986) and in the global database Taxapad by Yu et al. (2012). In Santos et al. (2009) there are some data on Microgastrinae in citrus orchards. As a result of rather poor and limited research of Microgastrinae fauna on the territory of Serbia and Montenegro, the main aim of the present study was to present some new findings of these wasps through tritrophic associations.

Material and methods

For the purposes of this study the specimens of Microgastrinae were collected on the territory of Serbia and Montenegro during the period of 2001-2013. Material was sampled mainly by collecting caterpillars from plant leaves, both from trees and herbaceous plants. Some of the wasp specimens were collected using sweep net and Malaise trap. Caterpillars were put in specially made cages and they were fed with adequate food plants in the following 10 days. Some of the parasitoids emerged directly from caterpillars, while some of them appeared after host pupation (larva/pupal parasitism). Most of the collected parasitoids were kept dry and mounted on paper cards and pinned. Partly, specimens of each species were conserved in 96% ethanol for further DNA analyses. All analysed material has been deposited in the insect collection of the Department of Biology and Ecology, Faculty of Sciences and Mathematics, University of Niš, Serbia.

Identification

For the identification of feeding plants botanists from the Department of Biology and Ecology, Faculty of Sciences and Mathematics, University of Niš, Serbia were consulted. Larvae of butterflies were identified by Boženka Hric. Parasitoid specimens were identified by Dr. Jenő Papp from Hungarian Natural History Museum, Budapest. In this particular study we followed the classification given in the keys proposed by Papp (1978, 1981, 1982, 1983, 1987).

Investigated localities

All the localities are given the altitude value. All measurements are given in meters above sea level. Serbia: Bosilegrad, 780 m; Deliblatska peščara, 160 m; Dukat Mt., 1150-1400 m; Kruševac, 165 m; Lebane, Konjino, 275 m; Niš, Gornji Matejevac, 425 m; Niš, Niška banja 250 m, Niš, Pantelej, 220 m; Sićevačka klisura (gorge), 225 m; Tara Mt., 1090 m; Vlasinsko jezero 1250 m; Zasavica, Valjevac, 75 m. Montenegro: Durmitor, Žabljak, 1450 m; Visitor Mt. 1700 m.

Results

The identified species are listed alphabetically. For each species the locality, date, legator's name and the number of males and females collected were given and those were marked with universal symbols. In cases where there was the host and the plant the information was updated by adding the full names of these members of tritrophic

associations. Additional information and remarks concerning parasitoid biology/strategy and morphology of cocoons are presented in the notes. Finally, before the species name new findings for the investigated territories were marked using the following symbols: (*) new to Serbia, ($^{\#}$) new to Montenegro.

Apanteles lenea Nixon, 1986

SRB, Sićevačka klisura (gorge), 04.06.2011, leg. V. Žikić, 1♀; SRB, Vlasinsko jezero (lake), 05.06.2014, leg. V. Žikić, 1♂ on *Centaurea jacea* L. ex larvae *Verbascum thapsus* L. Notes: solitary parasitoid.

Hosts: Tortricidae: *Olethreutes arbutella* (L.), *Oncocera semirubella* (Scopoli), *Sparganothis pilleriana* (Denis & Schiffermüller).

Distribution: Austria, Bulgaria, Czech Republic, France, Germany, Hungary, Italy, South Korea, Romania, Russia (Chita Oblast, Primorskye Kray, Sakhalin Oblast), Serbia, Slovakia, Spain, Sweden, Switzerland, Turkey, United Kingdom.

Cotesia jucunda (Marshall, 1885)

SRB, Niš, Gornji Matejevac, 25.05.2014, leg. V. Žikić, 25♂, 21♀ on *Linaria dalmatica* subsp. *macedonica* (Griseb.) D. A. Sutton ex larvae *Melitaea didyma* (Esper). Notes: gregarious, separately spun cocoons randomly around dead caterpillar.

Hosts: Geometridae: *Abraxas grossulariata* (L.), *Alsophila aceraria* (Denis & Schiffermüller), *Campaea margaritaria* (L.), *Cyclophora linearia* (Hübner), *C. punctaria* (L.), *C. ruficiliaria* (Herrich-Schäffer), *Epirrita autumnata* (Borkhausen), *Erannis defoliaria* (Clerck), *Eupithecia dodoneata* Guenée, *Operophtera brumata* (L.), *O. fagata* (Scharfenberg), *Phigalia pilosaria* (Denis & Schiffermüller); Pieridae: *Pieris brassicae* (L.); Pterophoridae: *Stenoptilia veronicae* Karvonen; Nymphalidae: *Vanessa atalanta* (L.), Curculionidae: *Anthonomus pomorum* (L.).

Distribution: Armenia, Austria, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iran, Ireland, Moldova, Mongolia, Poland, Romania, Russia (Primorskye Kray), Serbia, Slovakia, Spain, Sweden, Switzerland, Turkey, United Kingdom.

****Cotesia ofella*** (Nixon, 1974)

SRB, Kruševac, 03.05.2014, leg. M. Lazarević, 65 ♀. Notes: gregarious, from unknown yellowish group cocoon associated with *Chamaecyparis lawsoniana* (A. Murray) Parl.

Hosts: Erebidae: *Spilosoma lubricipeda* (L.); Lasiocampidae: *Euthrix potatoria* (L.); Noctuidae: *Acronicta aceris* (L.), *A. rumicis* (L.), *Simyra dentinosa* Freyer.

Distribution: Belgium, Czech Republic, Finland, Germany, Hungary, Iran, Italy, Netherlands, Poland, Slovakia, Spain, Switzerland, Turkey, Ukraine, United Kingdom.

***Cotesia* sp. 1**

SRB, Bosilegrad, Dukat Mt., 07.08.2011, leg. V. Žikić, 1♂. Notes: sweep net.

***Cotesia* sp. 2.**

SRB, Vlasinsko jezero (lake), 06.06.2014, leg. S. Stanković, 3♂, 21♀. Notes: gregarious in shared cocoon. Hyperparasitized with *Gelis* sp. (Ichneumonidae: Cryptinae).

$^{\#}$Cotesia tetricus (Reinhard, 1880)

MNE, Durmitor, Žabljak, 03.08.2005, leg. V. Žikić, 25♀. Notes: gregarious from unknown yellowish group cocoon. Hyperparasitized by *Mesochorus* sp. (Ichneumonidae: Mesochorinae).

Hosts: Erebidae: *Parasemia plantaginis* (L.), *Spilosoma lubricipeda*; Geometridae: *Erannis defoliaria*, *Eupithecia exiguata* (Hübner); Nymphalidae: *Erebia aethiops* (Esper), *Lasiommata megera* (L.), *Maniola jurtina*; Zygaenidae: *Zygaena filipendulae*.

Distribution: Austria, Croatia, Czech Republic, Finland, France, Germany, Greece, Hungary, Iran, Ireland, Italy, Kazakhstan, Latvia, Norway, Poland, Romania, Russia (Yaroslavl Oblast), Sweden, Switzerland, Turkey, United Kingdom.

Cotesia tibialis Curtis, 1830

SRB, Sićevačka klisura (gorge), 13.04.2014, leg. V. Žikić, 13♀; SRB, Vlasinsko jezero (lake), 06.06.2014, leg. S. Stanković, 3♂, 21♀. Notes: gregarious in shared cocoon. Hyperparasitized with *Gelis* sp. (Ichneumonidae: Cryptinae).

Hosts: Arctiidae: *Arctia tigrina* (Villers); Bombicidae: *Bombyx mori* L.; Cossidae: *Dyspessa ulula* (Borkhausen); Erebidae: *Diaphora mendica* (Clerck), *Ocnogyna baetica* (Rambur), *O. loewii* (Zeller), *Spilosoma lubricipeda* (L.); Gelechiidae: *Pexicopia malvella* (Hübner); Geometridae: *Eupithecia abbreviata* Stephens, *E. innotata* (Hufnagel), *E. tripunctaria* Herrich-Schäffer, *Phigalia pilosaria* (Denis & Schiffermüller); Lasiocampidae: *Dendrolimus pini* (L.), *Eriogaster lanestris* (L.); Lycaenidae: *Plebejus loewii* (Zeller);

Noctuidae: *Acronicta aceris, A. euphorbiae* (Denis & Schiffermüller), *A. leporina* (L.), *A. rumicis*, *Agrotis clavis* (Hufnagel), *A. rectangular* (Denis & Schiffermüller), *A. segetum* (Denis & Schiffermüller), *Anarta myrtilli* (L.), *Antoculeora ornatissima* Walker, *Autographa gamma* (L.), *Euclidia mi* (Clerck), *Catocala nupta* (L.), *Cerastis rubricosa* (Denis & Schiffermüller), *Cucullia argentea* (Hufnagel), *C. artemisiae* (Hufnagel), *C. asteris* (Denis & Schiffermüller), *C. lucifuga* (Denis & Schiffermüller), *Diachrysia chrystis* (L.), *Discestra trifolii* (Hufnagel), *Eupsilia transversa* (Hufnagel), *Eurois occulta* (L.), *Euxoa temera* (Hübner), *E. tritici* (L.), *Graphiphora augur* (Fabricius), *Lacanobia oleracea* (L.), *L. pisi* (L.), *Mamestra brassicae* (L.), *Noctua pronuba* (L.), *Orthosia gothica* (L.), *O. gracilis* (Denis & Schiffermüller), *O. incerta* (Hufnagel), *Xestia c-nigrum* (L.), *X. exoleta* Leech, *X. stigmatica* (Hübner), *X. triangulum* (Hufnagel), *Xylena exsoleta* (L.), *X. vetusta* (Hübner); Notodontidae: *Clostera anastomosis* (L.), *Phalera bucephala* (L.); Nymphalidae: *Aglais urticae* (L.), *Euphydryas aurinia* (Rottemburg), *Aglais io* (L.), *Maniola jurtina* (L.), *Pararge aegeria* (L.), *Pyronia tithonus* (L.), *Vanessa indica* Herbst; Pieridae: *Aporia crataegi* (L.), *Leptidea sinapis* (L.), *Pieris brassicae*; Plutellidae: *Plutella xylostella* (L.); Pyralidae: *Loxostege sticticalis* (L.), *Ostrinia nubilalis* (Hübner), *Pyrausta cingulata* (L.), *P. purpuralis* (L.), *P. sanguinalis* (L.); Tortricidae: *Ancylis laetana* (Fabricius), *Tortrix viridana* L.; Yponomeutidae: *Yponomeuta malinellus* Zeller; Zygaenidae: *Zygaena filipendulae* (L.).

Distribution: Afghanistan, Armenia, Austria, Azerbaijan, Belgium, Bulgaria, Canary Islands, China (Shanxi, Xinjiang), Croatia, Czech Republic, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iran, Israel, Italy, Japan, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, F.Y.R. of Macedonia, Moldova, Mongolia, Montenegro, Netherlands, Poland, Romania, Russia (Adygeyskaya, Chita Oblast, Irkutsk Oblast, Kaliningrad Oblast, Krasnodor Kray, Krasnoyarsk Kray, Moscow Oblast, Primorskye Kray, Sankt Petersburg, Tatarskaya Respublika, Vladimir Oblast, Yaroslavl Oblast), Serbia, Slovakia, Spain, Sweden, Switzerland, Turkey, Turkmenistan, Ukraine, United Kingdom, Uzbekistan.

Cotesia zygaenarum (Marshall, 1885)

SRB, Sićevačka klisura (gorge), 15.05.2012, leg. V. Žikić, 155♂ 167♀ ex 5th instar larvae of *Zygaena filipendulae*. Notes: gregarious. Associated with *Ulmus* sp.

Host: Geometridae: *Phigalia pilosaria*; Lycaenidae: *Polyommatus icarus* (Rottemburg); Noctuidae: *Diloba caeruleocephala* (L.); Nymphalidae: *Euphydryas aurinia*; Pieridae: *Colias hyale* (L.); Zygaenidae: *Zygaena brizae* (Esper), *Z. ephialtes* (L.), *Z. filipendulae, Z. laeta* (Hübner), *Z. lonicerae* (Scheven), *Z. trifolii* (Esper), *Z. viciae* (Denis & Schiffermüller).

Distribution: Albania, Armenia, Austria, Azerbaijan, China (Hubei), Czech Republic, Finland, France, Germany, Greece, Hungary, Iran, Italy, Japan, Korea, F.Y.R. of Macedonia, Moldova, Mongolia, Poland, Romania, Russia (Dagestanskaya Respublika, Krasnodar Kray, Omsk Oblast, Primorskye Kray, Ryazan Oblast, Voronezhskaya Oblast), Serbia, Slovakia, Switzerland, Turkey, United Kingdom.

****Dolichogenidea breviventris*** (Ratzeburg, 1848):

SRB, Sićevačka klisura (gorge), 13.04.2014, leg. V. Žikić, 13 ♀. Notes: gregarious.

Hosts: Coleophoridae: *Coleophora anatipennella* (Hübner), *C. betulella* Heinemann, *C. flavipennella* (Duponchel), *C. gryphipennella* (Hübner), *C. lutipennella* (Zeller), *C. prunifoliae* Doets, *C. serratella* (L.); Noctuidae: *Orthosia miniosa* (Denis & Schiffermüller).

Distribution: Canada (Newfoundland & Labrador), Czech Republic, Egypt, Finland, Germany, Hungary, Italy, Korea, Moldova, Netherlands, Poland, Romania, Russia (Voronezhskaya Oblast), Slovakia, Sweden, Switzerland, Turkey, United Kingdom.

Dolichogenidea candidata (Haliday, 1834) = ***D. longicauda*** (Wesmael, 1837)

SRB, Niš, Pantelej, 29.05.2014, leg. V. Žikić, 1♀ on *Euonymus europaeus* L. ex pupa *Yponomeuta cagnagella* (Hübner). Notes: solitary parasitoid.

Hosts: Chimabachidae: *Diurnea lipsiella* (Denis & Schiffermüller); Erebidae: *Euproctis chrysorrhoea* (L.); Gelechidae: *Recurvaria leucatella* (Clerck), *R. nanella* (Denis & Schiffermüller); Geometridae: *Abraxas grossulariata*; Gracillaridae: *Gracillaria syringella* (Fabricius); Lasiocampidae: *Malacosoma neustria* (L.); Tortricidae: *Hedya nubiferana* (Haworth), *Pandemis cerasana* (Hübner), *Spilonota ocellana* (Denis & Schiffermüller); Yponomeutidae: *Paraswammerdamia lutarea* (Goeze), *Swammerdamia caesiella* (Hübner).

Distribution: Azerbaijan, Bulgaria, Cape Verde Islands, Germany, Greece (Crete), Hungary, Ireland, F.Y.R. of Macedonia, Mongolia, Romania, Russia (Khabarovsk Kray, Krasnodar Kray, Primorskye

Kray, Sakhalin Oblast), Serbia, Sweden, Tajikistan, Turkmenistan, United Kingdom, Uzbekistan.

[*D. longicauda* (Wesmael, 1837)]

Host: Bucculatridae: *Bucculatrix cristatella* (Zeller); Chimbachidae: *Diurnea salicella* (Hübner); Choreutidae: *Choreutis nemorana* (Hübner), *C. pariana* (Clerck); Elachisitdae: *Agonopterix ocellana* (Fabricius), *Blastodacna atra* (Haworth); Erebidae: *Euproctis chrysorrhoea*; Gelechiidae: *Anarsia eleagnella* Kuznetsov, *A. lineatella* Zeller, *Dichomeris derasella* (Denis & Schiffermüller), *Exoteleia dodecella* (L.), *Mirificarma lentiginosella* (Zeller), *Recurvaria leucatella*, *R. nanella*, *Teleiodes paripunctella* (Thunberg), *T. proximella* (Hübner), *T. saltuum* (Zeller); Gracillariidae: *Acrocercops brongniardella* (Fabricius), *Caloptilia populetorum* (Zeller), *Gracillaria syringella*, *Phyllonorycter corylifoliella* (Hübner), *P. elmaella* Doğanlar & Mutuura; Lasiocampidae: *Malacosoma neustria*; Momphidae: *Mompha subbistrigella* (Haworth); Peleopodidae: *Carcina quercana* (Fabricius); Plutellidae: *Plutella xylostella*; Praydidae: *Atemelia torquatella* (Lienig & Zeller); Psychidae: *Dahlica lichenella* (L.); Pyralidae: *Acrobasis consociella* (Hübner), *A. marmorea* (Haworth); *Elegia fallax* (Staudinger), *Etiella zinckenella* (Treitschke), Tortricidae: *Acleris holmiana* (L.), *A. laterana* (Fabricius), *A. quercinana* (Zeller), *Adoxophyes orana* (Fischer von Röslerstamm), *Archips oporana* (L.), *A. rosana* (L.), *Choristoneura murinana* (Hübner), *C. rosaceana* (Harris), *Ditula angustiorana* (Haworth), *Epinotia nigricana* (Herrich-Schäffer), *Eudemis profundana* (Denis & Schiffermüller), *Exapate duratella* Heyden, *Hedya nubiferana*, *H. pruniana* (Hübner), *Pandemis cerasana*, *Parapandemis chondrillana* (Herrich-Schäffer), *Rhopobota naevana* (Hübner), *Rhyacionia buoliana* (Denis & Schiffermüller), *Spilonota ocellana*, *Tortricodes alternella* (Denis & Schiffermüller), *Tortrix viridana*, *Zeiraphera griseana* (Hübner), *Z. rufimitrana* (Herrich-Schäffer); Yponomeutidae: *Paraswammerdamia albicapitella* (Scharfenberg), *P. lutarea* (Haworth), *Swammerdamia caesiella*, *Yponomeuta cagnagella* (Hübner), *Zelleria parnassiae* Braun; Ypsolophidae: *Ypsolopha alpella* (Denis & Schiffermüller); Cecidomyiidae: *Dasineura pyri*; Tenthredinidae: *Phyllocolpa* Benson.

Distribution: Afghanistan, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bulgaria, Canada (British Colombia), Czech Republic, Estonia, Finland, France, Georgia, Germany, Hungary, Italy, Korea, Latvia, Lithuania, Moldova, Mongolia, Netherlands, Poland, Romania, Russia (Buryatskaya Respublika, Krasnodar Kray, Sankt Petersburg), Serbia, Slovakia, Slovenia, Spain, Switzerland, Turkey, Ukraine, United Kingdom.

****Glyptapanteles compressiventris*** (Muesebeck, 1921)

SRB, Niš, Pantelej, 26.04.2014, leg. V. Žikić, 42♂, 62♀, ex larva *Arctia villica* (L.). Notes: gregarious, separately spun cocoons.

Hosts: Erebidae: *Amata phegea* (L.), *Diaphora mendica*, *Arctia villica*, *Ocnogyna baetica*, *O. loewii*, *O. pierreti* (Rambur), *Phragmatobia fuliginosa* (L.), *Spilosoma lubricipeda*; Noctuidae: *Amphipyra perflua* (Fabricius); Tortricidae: *Archips xylosteana* (L.).

Distribution: Armenia, Azerbaijan, Canada (Manitoba, Northwest Territories, Nunavut, Quebec), Croatia, Czech Republic, Finland, Germany, Hungary, Italy, Italy (Sicily), Kazakhstan, Lithuania, F.Y.R. of Macedonia, Moldova, Netherlands, Romania, Russia (Kamchatka Oblast, Primorskye Kray, Sakhalin Oblast, Sankt Petersburg, Voronezhskaya Oblast), Slovakia, Spain, Switzerland, Turkey, USA (New Hampshire), United Kingdom.

Glyptapanteles liparidis (Bouché, 1834)

SRB, Tara Mt., 25.06.2014, leg. V. Žikić, 2♀. On *Ostrya carpinifolia*. ex 3rd larval instar *Lymantria dispar* (L.). Notes: gregarious.

Hosts: Erebidae: *Calliteara abietis* (Denis & Schiffermüller), *C. pudibunda* (L.), *Arctia villica*, *Euproctis chrysorrhoea*, *E. taiwana* (Shiraki), *Orgyia antiquiodes* (Hübner), *O. australis* Walker, *O. thyellina* Butler; Lasiocampidae: *Dendrolimus albolineatus* Matsumura, *D. pini*, *D. punctatus* (Walker), *D. spectabilis* (Butler), *D. superans* (Butler), *Eriogaster lanestris*, *Malacosoma neustria;* Lymantriidae: *Dasychira pseudabietis* Butler, *Ivela auripes* Butler, *Lymantria dispar*, *L. obfuscate* Walker; Noctuidae: *Acronicta rumicis;* Notodontidae: *Clostera anastomosis*; Tortricidae: *Rhyacionia buoliana*.

Distribution: Austria, Belarus, Bulgaria, China (Beijing, Heilongjiang, Hunan, Jilin, Liaoning, Nei Menggu, Shaanxi, Taiwan, Zhejiang), Czech Republic, Finland, France, Germany, Hungary, India, Iran, Italy, Japan, Kazakhstan, Lithuania, Moldova, Mongolia, Poland, Romania, Russia (Chita Oblast, Irkutsk Oblast, Kaliningrad Oblast, Khabarovsk Kray, Krasnodar Kray, Novosibirsk Oblast, Primorskye Kray, Sakhalin Oblast, Sankt Petersburg, Saratov Oblast, Tomsk Oblast, Voronezhskaya Oblast, Yaroslavl Oblast), Serbia,

Slovakia, Spain, Sweden, Switzerland, Ukraine, United Kingdom.

Glyptapanteles porthetriae (Muesebeck, 1928)

SRB, Deliblatska peščara, 17.05.2001, A. Ćetković, 1♀. Notes: Mal. Trap. SRB, Niš, Niška banja, 23.05.2014; Leg. S. Stanković - On *Acer monspssulanum* L. and *Ulmus* sp. ex 2nd instar larvae of *L. dispar*; SRB, Sićevačka klisura (gorge), 21.05.2014, leg.V. Žikić, 2♂, 2♀. Notes: solitary, white cocoon underside leaf, on *Populus tremula* L. ex 2nd instar larvae of *L. dispar*; SRB, Lebane, Konjino, 03.05.2014, leg. S. Stanković, 7♂, 10♀ on *Prunus domestica* L. ex 2nd instar larvae of *L. dispar*; 3♂, 3♀ on *Cydonia oblonga* Mill. ex 2nd instar larvae of *L. dispar*. Notes: solitary, white cocoons.

Hosts: Geometridae: *Alcis repandata* (L.), *Phigalia titea* Cramer; Lymantridae: *Lymantria dispar*, *L. obfuscate*.

Distribution: Armenia, Austria, Azerbaijan, Bulgaria, China (Jilin), Croatia, Czech Republic, Finland, France, Georgia, Germany, Greece, Hungary, India, Iran, Italy, Sicily, Korea, Moldova, Morocco, Poland, Portugal, Romania, Russia (Chita Oblast, Dagestanskaya Respublika, Moscow Oblast, Primorskye Kray, Voronezhskaya Oblast, Yaroslavl Oblast), Serbia, Slovakia, Spain, Switzerland, Turkey, Ukraine, United Kingdom.

Microgaster bicolor (Nees 1834)

SRB, Deliblatska peščara, 17.05.2001, leg. A. Ćetković, 1♂, 1♀. Notes: Mal. Trap.

Hosts: Elachistidae: *Elachista gleichenella* (Fabricius); Erebidae: *Euproctis similis* (Fuessly), *Orgyia thyellina*; Gelechiidae: *Chrysoesthia drurella* (Fabricius); Gracillariidae: *Aspilapteryx tringipennella* (Zeller), *Caloptilia semifascia* (Haworth), *Gracillaria syringella*, *Parornix fagivora* (Frey), *Phyllonorycter acaciella* (Duponchel), *P. acerifoliella* (Zeller), *P. agilella* (Zeller), *P. blancardella* (Fabricius), *P. cavella* (Zeller), *P. celtidella* (Rondani), *P. comparella* (Duponchel), *P. connexella* (Zeller), *P. corylifoliella* (Hübner), *P. cydoniella* (Denis & Schiffermüller), *P. emberizaepennella* (Bouché), *P. froelichiella* (Zeller), *P. harrisella* (L.), *P. heegeriella* (Zeller), *P. junoniella* (Zeller), *P. kleemannella* (Fabricius), *P. lantanella* (Schrank), *P. mespilella* (Hübner), *P. millierella* (Staudinger), *P. nicellii* (Stainton), *P. parisiella* (Wocke), *P. populifoliella* (Treitschke), *P. robiniella* (Clemens), *P. spinicolella* (Zeller), *P. strigulatella* (Lienig & Zeller), *P. tenerella* (Joannis); Lyonetiidae: *Leucoptera malifoliella* (O. Costa), *Lyonetia rajella* (L.); Noctuidae: *Melanchra persicariae* (L.); Plutellidae: *Plutella porrectella* (L.); Psychidae: *Acanthopsyche atra* (L.); Pyralidae: *Ephestia elutella* (Hübner); Tineidae: *Psychoides verhuella* Bruand; Tischeriidae: *Tischeria ekebladella* (Bjerkander); Tortricidae: *Eucosma aemulana* (Schläger); Cimbicidae: *Trichiosoma betuleti*.

Distribution: Belgium, Bulgaria, Canary Islands, China, China (Ningxia), Croatia, Finland, France, Georgia, Germany, Greece, Greece (Crete), Hungary, Iran, Ireland, Italy, Japan, Lithuania, Moldova, Mongolia, New Zealand, Poland, Romania, Russia (Kamchatka Oblast, Moscow Oblast, Sankt Petersburg, Yaroslavl Oblast), Serbia, Slovakia, Spain, Switzerland, Turkmenistan, Ukraine, United Kingdom.

Microplitis pellucida Telenga, 1955

SRB, Zasavica, Valjevac, 19.05.2010, leg. A. Ćetković, 5♂. Notes: Mal. Trap; SRB, Sićevačka klisura, 12.05.2013, leg. V. Žikić, 2♂, 3♀. On various plants: *Populus alba* L., *Ulmus* sp., *Malus domestica* Borkh. ex *Lymantria dispar* 2nd larval instar. Notes: solitary, white cocoon.

Hosts: no data

Distribution: Denmark, Germany, Hungary, Korea, Netherlands, Russia (Altayskiy Kray, Primorskye Kray).

Microplitis varipes (Ruthe, 1860):

SRB, Niš, Pantelej, 14.09.2014, leg. V. Žikić, 1♀. Notes: sweep net

Hosts: Crambidae: *Loxostege sticticalis;* Noctuidae: *Cucullia scopariae* Dorfmeister, *Hecatera bicolorata* (Hufnagel), *Omphalophana antirrhinii* (Hübner); Chrysomelidae: *Chrysolina didymata*.

Distribution: Austria, Azerbaijan, China (Qinghai, Xinjiang), Czech Republic, Finland, Germany, Hungary, Italy, Kazakhstan, Moldova, Mongolia, Montenegro, Netherlands, Poland, Russia (Chita Oblast, Krasnodar Kray, Ryazan Oblast, Sankt Petersburg, Yaroslavl Oblast), Switzerland, Turkey, Ukraine.

Pholetesor elpis (Nixon 1973)

SRB, Niš, G. Matejevac, 24.05.2014, leg. V. Žikić, 30♂, 5♀. Notes: gregarious; yellow cocoons distributed in 3 rows, one over another forming kind of cluster.

Hosts: Coleophoridae: *Coleophora serratella* (L.); Elachistidae: *Elachista cingillella* Herrich-Schäffer), *E. subnigrella* (Douglas); Gracillariidae: *Caloptilia rufipennella* (Hübner), *Calybites auroguttellus*

(Stephens), *Phyllonorycter blancardella*, *P. comparella.*

Distribution: Austria, Azerbaijan, Bulgaria, Croatia, Czech Republic, Finland, France, Greece, Hungary, Korea, Mongolia, Netherlands, Poland, Russia (Magadanskaya Oblast, Primorskye Kray, Sakhalin Oblast), Slovakia, Ukraine, United Kingdom.

***Pholetesor* sp.**

MNE, Visitor mt, 11.07.2013, leg. V. Žikić, 7♀, ex *Euproctis similis*; Notes: gregarious, from small white group cocoon.

Discussion

In this study 18 Microgastrinae species emerged forms caterpillars from different larval instars or from pupae. The identified species belong to seven genera: *Apanteles* (1), *Cotesia* (7), *Dolichogenidea* (2), *Glyptapanteles* (3), *Microgaster* (1), *Microplitis* (2) and *Pholetesor* (2). Although there is a limited number of species reported here, it should be pointed out that eight of the total identified numbers are recorded for the first time on the investigated territories; one for Montenegro and seven for the territory of Serbia. As a result it is evident that a better knowledge about the diversity of this group of Braconidae is needed. Concerning the role of microgastrine in ecosystems as a very important factor of biological control, the importance of investigation of this group is even higher. It needs to be added that, beside the primary parasitoids such Microgastrinae are, our study revealed various hyperparasitoids which will be considered in the next step of this investigation aiming at connecting them with other members in tetratrophic associations. As for *Dolichogenidea longicauda* the data on hosts and the distribution are presented separately because there are two opinions on its taxonomical status; it is also considered as a different species *D. candidate.*

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